

REMARKS

By this Amendment, Claims 1, 3, 10, 11, 15 and 16 are amended to correct certain minor informalities discovered upon careful review of the claims. Further, new claim 20 is added to cover the invention claimed in the original claim 1. The new claim 20 is identical to the original claim 1, except that the term “detection device” has been replaced with the term “courtesy switch.” Therefore, claims 1 and 3-20 are pending. No new matter has been added. Reconsideration in view of the above amendments and the following remarks is respectfully requested.

Claim Rejections

The Examiner has rejected claims 1 and 3-19 under 35 USC § 103(a), as being unpatentable over U.S. Patent No. 6,048,002 to Ohta et al. (Ohta) and U.S. Patent No. 6,176,528 to Taga and further in view of U.S. Patent No. 6,176,528 to Shimada. These rejections are respectfully traversed. The Examiner has stated:

Ohta discloses a door closer (103) comprising a latch (108) engaging an engagement member (4), and urging member (111) that urges the latch towards the initial position, a ratchet (110), an actuation mechanism (114, 116, 117, 118, 120 and 122), a motor (M) and a controller to control the motor (Figures 1, 13A-21 and Col. 10 Line 2 to Col 21 Line 10).

However, Ohta fails to disclose that the latch mechanism includes a courtesy switch and that the controller includes a timer.

Taga teaches that is known in the art to have courtesy switch (85, 86 and 88) to detect the door is in a predetermined position separate from the release position in the door opening direction.

Shimada teaches that is known in the art to have a time (106) in a controller (100) of a door closer device.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a courtesy switch, as taught by Taga, into a latching device as described by Ohta, in order to prevent inadvertent closing of the door.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have a timer, as taught by Shimada, into a latching device by Ohta, in order to set time to the latching operations.

As to claims 17-19, Ohta discloses the use of a positive temperature coefficient thermistor (147).

The rejection, however, does not address the limitation of each independent claim that “the actuation mechanism holds the ratchet at a position at which the ratchet cannot engage with the latch after the ratchet disengages from the latch, unless the courtesy switch detects that the door is located at the predetermined position.” This limitation has been present in the original independent claims 1 and 22, and a slight variation of this element has been present in the original independent claim 16 (originally, the term “detection device” was used, but that term has been amended to be “courtesy switch”). The Ohta, Taga, or Shimada references do not teach this limitation.

The purpose of this limitation is described in the respective paragraphs on page 27, line 31- page 28, line 11 and page 28, line 32 – page 29, line 11 of the specification, as quoted below:

If the trunk door 2 is located at the released position and a certain force acts to urge the trunk door 2 in the door closing direction, the trunk door 2 moves from the released position in that direction. The striker 4 then presses the damper 12a of the latch 8. However, as long as the connecting arm 17 is located at the intermediate stop position of FIG. 10, the drive cam 14 operates to hold the first and second ratchets 10, 20 at positions at which the ratchets 10, 20 cannot engage with the latch 8. Thus, even if the striker 4 presses the latch 8 to rotate counterclockwise from the initial position of FIG. 10, the remaining components of the door closer 3 are held at the positions of FIG. 10 and do not move. Accordingly, the limit switch 24 is maintained in the ON state, and the door closer 3 does not start the door latching operation.

After the door closer 3 completes the door releasing operation, the courtesy switch 46 is maintained in OFF state until the trunk door 2 is moved to the aforementioned position farther than the released position in the door opening direction. As long as the courtesy switch 46 is turned off, the control circuit 44 maintains the motor M in the de-activated state to hold the connecting arm 17 at the intermediate stop position of FIG. 10. Accordingly, the first and second ratchets 10, 20 are held at the positions at which the ratchets 10, 20 cannot engage with the latch. As a result, even if a certain force acts to urge the trunk door 2 in the door closing direction after the door releasing operation has been completed, the door closer 3 does not start the door latching operation.

Neither the Ohta reference nor the Taga reference nor the Shimada reference discloses such a solution, nor do they disclose solutions that would act in a similar way. Neither Ohta nor Shimada teaches a courtesy switch (or detection device). Only the Taga reference teaches the use of position sensors (detection devices), and that use differs greatly from the present claimed invention, in that it does not control whether or not the ratchet is at a position at which it can or cannot engage with the latch.

The Taga reference teaches having a variety of position sensors that have to be satisfied before the control unit energizes the electric closing unit. The control unit only controls whether or not the electric closing unit is energized. It does not control whether or not a ratchet can engage with a latch. Note that, in the Taga reference, the locking plate ("ratchet"?) and the latch plate ("latch"?) are part of a lock unit (15), which is separate from the electric closing unit (20). The control unit does not control whether the locking plate locks the latch plate or not. Instead, the locking of the latch plate by the locking plate is a condition sensed by the third position sensor and is a precondition of the electric closing unit being energized. Thus, in no way would it teach the actuation mechanism holding the ratchet (or locking plate) at a position at which it cannot engage with the latch (or latch plate) after the ratchet disengages from the latch, unless the detection device courtesy switch detects that the door is located at the predetermined position.

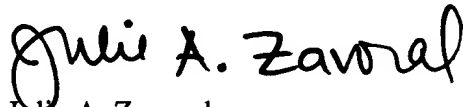
In the claimed invention, the controller not only controls the motor, but by controlling the motor, also controls the position of the ratchets by controlling the position of the connecting arm. As long as the connecting arm is located at the intermediate stop position, the drive cam (part of the actuation mechanism) operates to hold the first and second ratchets at positions at which the ratchets cannot engage with the latch, and the unintentional locking of the trunk door is avoided.

CONCLUSION

Based on the foregoing amendments and remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance of Claims 1 and 3-20 are earnestly solicited.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution. The Commissioner is hereby authorized to charge any additional fees which may be due, or to credit any overpayment made, to Deposit Account No. 50-2522.

Respectfully submitted,



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